

Aquaculture Production Systems

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Editor

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Preface

Aquaculture. A simple word but a complex story. It's also a story of contradictions. In some ways aquaculture is very old, having been around in some regions for 4,000 to 5,000 years. However, as a major industry, and source food for mankind, it's been around only about fifty to sixty years. While aquaculture is an industry of several hundred species, the vast majority of production is dominated by less than ten. Also, unlike other livestock crops, we not only raise herbivores and omnivores but also carnivores and even filter feeders. It is a complex story indeed.

The idea for this book began in the 1990s. At Kentucky State University (KSU) aquaculture was initially entirely a research area. We received approval to teach our first course in 1991 and I developed Principles of Aquaculture as an experimental course. Gradually my colleagues and I at KSU developed additional courses to fill out a curriculum. In the Principles of Aquaculture course, I gave an overview of concepts, and then worked through a short but comprehensive overview of some major aquaculture species. However, the systems used to raise the fish were given a very cursory overview of one or two lectures. The more I thought about it the more it seemed to me that the aquaculturist's real job is to manage the environment, and that is the job of the production system. Wouldn't it be productive to develop another course that approached aquaculture not from the direction of the culture species, but from the direction of the culture system itself? The fact is that all species from shellfish to blue fin tuna have certain things they all need. Primary among them is a suitable water temperature, sufficient dissolved oxygen, and a way to remove or detoxify their waste products. The theme of this book is to explain how all of the different production systems we use provide these services, in many diverse ways.

To provide the best coverage of the subject, and a comprehensive explanation of each system, my job was to try to convince one of the most knowledgeable experts on each system to provide a chapter covering that system. To do this I tapped into a network of colleagues and friends, many of whom I had gotten

to know during my years or while working with the World Aquaculture Society (WAS) in a number of different roles. If you go through the list of contributors, you will find that there are no less than six former WAS presidents contributing to the book.

The book is intended as a resource for students and researchers. Even within aquaculture there are individuals who know a tremendous amount about one system, but have had limited exposure to other systems. It is also intended as a resource for those outside of aquaculture who wish to understand the industry better. In two of my chapters I have tried to explain in simple terms the basic concepts of the different systems. I have also used extreme examples to help those from other professions appreciate just how hard our job can be with some aquatic species. Examples of non-aquaculture professionals that I hope can benefit from this book include entrepreneurs, investment bankers, feed and equipment salesmen, engineers, and environmentalists.

Environmental groups often use the broad term “aquaculture” when referring to issues related to one particular species or production system. They often paint with a very “broad brush.” With a greater knowledge of the many different systems encompassed by this term, they might better understand aquaculture and all it represents. They might also better understand that the system they take issue with is only a very small portion of the larger aquaculture industry while their comments and criticisms negatively impact ALL parts of the industry. They might also become better able to appreciate the continuing efforts to improve the system’s efficiencies and sustainability credentials. They can then come to understand that some of these systems are actually able to *improve* the environment by filtering out excess nutrients from whatever source.

A final theme of the book is a look ahead. What new types or combinations of systems might we see down the road? How will climate change affect aquaculture and its ability to provide increasing amounts of high quality protein to human populations, especially in regions of the world that need it the most?

I hope this text can serve as a resource for students and practitioners for many years to come and that it inspires them to develop new systems in the future. The Blue Revolution is really just beginning.

Jim Tidwell

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